

# School Science and Mathematics

## 1984 December Title Index

### Articles:

- A Criterion-Referenced Evaluation of Student Teachers in Science, C. Leland Smith, J. Truman Stevens, February 1984, 125
- Annual Listing of SSM Science Reviewers, May/June 1984, 415
- Annual Listing of SSM Mathematics Reviewers, May/June 1984, 416
- Annual Business Meeting Minutes, SSMA, Darrel W. Fyffe, May/June 1984, 420
- A One-and-One Free Throw Opportunity in Basketball: The Probability of It, Ernest Woodward, October 1984, 468
- Applications of Mathematics in Science for Motivated Secondary Students, Clifford Sloyer, William Sacco, Richard Crouse, Wayne Copes, January 1984, 27
- A Question of Associativity or Many Are the Uses of Commutativity, Edwin A. Rosenberg, November 1984, 566
- A Self-Communication Structure for Learning Mathematics, Brenda H. Manning, January 1984, 43
- A Sequence of Sorting Strategies, David R. Duncan, Bonnie H. Litwiller, January 1984, 52
- Books Received: Miscellaneous, Science Titles, January 1984, 63
- Cancer Education in High School Biology Textbooks, Lloyd H. Barrow, Betty L. Bitner, April 1984, 285
- Cognitive and Affective Variables Affecting Black Freshmen in Science and Engineering at a Predominantly White University, Mary M. Atwater, Ronald D. Simpson, February 1984, 100
- College Freshmen Mathematics Abilities: Adults versus Younger Students, Dennis Fredrick, Carol Mishler, Thomas P. Hogan, April 1984, 327
- Computer Diagnosis of Errors, George W. Bright, March 1984, 208
- Crustal Evolution Education Project Materials: National Evaluation, Victor J. Mayer, January 1984, 7
- Cynicism, Dogmatism, Relativism, and Scepticism: Can All These Be Avoided? Stephen P. Norris, October 1984, 484
- Developing Area Formulas, L. Pereira-Mendoza, April 1984, 297
- Developing Spatial Ability in Young Children, Charles E. Mitchell, Grace M. Burton, May/June 1984, 395
- Editorial, Gary G. Bitter, October 1984, 451
- Editorial, Gary G. Bitter, December 1984, 631
- Editorial, Herb Cohen, May/June 1984, 361
- Exploring Relationships among Elementary School Students' Interest in Science, Attitudes toward Science, and Reactive Curiosity, Harold Harty, Hans O. Andersen, Larry G. Enochs, April 1984, 308
- Fractions, Division, and the Calculator, David A. Blaeuer, February 1984, 113

- Functions and Equations in High School Algebra, Eugene F. Krause, February 1984, 136
- "Guess and Check" Problem Solving Strategy + Computer Programming = A Tool to Solve Word Problems, William A. Stannard, October 1984, 453
- If You Teach Science and Mathematics, Then Write! Jerome E. DeBruin, Thomas C. Gibney, January 1984, 33
- Inferential Logic in Geometry, Kenneth A. Retzer, April 1984, 277
- Investigating Decimal Fractions with The Hand Calculator, Ruth A. Meyer, James E. Riley, November 1984, 556
- Leastwise, Not Much!, George G. Mallinson, January 1984, 1
- Logic, Tradition, Truth in Algebra, and Inferences for Geometry, Kenneth A. Retzer, March 1984, 181
- Masculinity, Femininity and Androgeny Among Male and Female Science and Non-Science Majors, Dale R. Baker, October 1984, 459
- Naive Theories in Biology: Children's Concept of the Human Body, Joel J. Mintzes, November 1984, 548
- On Teaching *Flatland*, Joan Baum, May/June 1984, 363
- Our Readers Respond, November 1984, 541
- Probability: Developing Student Intuition with a 20 x 20 Array, Ivan W. Kelly, Bruce Bany, November 1984, 598
- Projectile Motion in a Resisting Medium: A Computer Simulation, William E. Thomas, April 1984, 320
- Proofs with Visible Inference Schemes, Kenneth A. Retzer, May/June, 1984, 367
- Protologarithms, W. Vance Underhill, April 1984, 316
- Research on Formal Reasoning Patterns in Science Education: Some Messages for Science Teachers, John R. Staver, November 1984, 573
- Revealing Images, Grace M. Burton, March 1984, 199
- School Science and Mathematics By-Laws, October 1984, 499
- School Science and Mathematics Association 1984 Annual Business Meeting Minutes, Darrel W. Fyffe, Executive Secretary, October 1984, 496
- Spatial Puzzles and the Assessment of Children's Problem-Solving Performance, Douglas M. Hill, Michael G. Redden, October 1984, 475
- Student Perceptions of Science Teachers, Classes, and Course Content, Robert E. Yager, Ronald J. Bonnstetter, May/June 1984, 406
- Teaching Mathematics in the Primary Schools in England: An American's Perspective, Frederick Flener, February 1984, 91
- The Concept Map as an Aid to Instruction in Science and Mathematics, John Dekkers, John Malone, March 1984, 220
- The Influence of Repeatable Testing on Retention in Mastery Learning, Gary E. Dunkelberger, Henry Heikkinen, November 1984, 590
- The Major Crisis in Science Education, Robert E. Yager, March 1984, 189
- Using Microcomputer-Assisted Mathematics Instruction to Develop Computer Literacy, Kathleen J. Steele, Michael T. Batista, Gerald H. Krockover, February 1984, 119
- Viete's Method for Calculating Pi, John C. Huber, November 1984, 542
- Wanted: Money and Time for Science, Kenneth W. Johns, April 1984, 271
- What is the National Earth Science Teachers Association?, Harold Stonehouse and Rod Cranston, December 1984, 699
- Women in *School Science and Mathematics* The Early Years, Myrna Skobel Agris, Joe Dan Austin May/June 1984, 386

**Departments:****Book Reviews:**

- January, 1984: *The Visual Science Series*, Dorothy Gabel, 75  
*Formulas Made Easy: 40 Visual Masters*, Jay Graening, 76  
*Sun Power: The Story of Solar Energy*, Audrey N. Tomera, 77  
*The Mathematics Laboratory in the Elementary Schools*, Helen Neely Cheek, 78  
*Brain Ticklers: Puzzles and Pastimes*, S. J. Pattison, 81  
*Building Basic Skills in Mathematics*, Otto Bassler, 81  
*Can Science Be Saved?* Lowell J. Bethel, 82
- February, 1984: *Multidimensional Man*, Don Kapoor, 167  
*Education in the 80's: Science*, Lowell J. Bethel, 169  
*Outdoor Education for the Whole Child*, Joseph A. Baust Sr., 170  
*So You Want To Do A Science Project!* Frank E. Crawley, 170  
*A Cat's Body*, Robin K. Richardson, 171  
*Billions of Bats*, Cheryl Hirsch, 172
- March, 1984: *Mathematics Contests: A Handbook for Mathematics Educators*, Edwin McClintock, 254  
*Crystals and Crystal Growing*, Frank E. Crawley, 225  
*The Elements of CAL*, Patricia Kennedy, 256  
*Guinea Pigs: An Owner's Guide to Choosing, Raising, Breeding, and Showing*, Dale R. Rice, 258  
*Twelve Pioneers of Science*, Michael L. Agin, 259  
*Pushbutton Mathematics*, Norma G. Hernandez, 260
- April, 1984: *Technical Mathematics*, John A. Dossey, 344  
*Modern Physical Science*, Frank E. Crawley, 346  
*365 Starry Nights*, Jerry Doyle, 348  
*Planning for Change: A Course in Ecological Planning*, Robin K. Richardson, 349
- May/June, 1984: *Summer Reading*, Margaret McKay, Gladys Bennett, 377  
*Introduction to BASIC Programming* Barbara Berman, 425  
*Teaching Kids Math* Virginia Usnick, 426  
*Speaking of Numbers: Skillbuilding in English and Arithmetic* Grace M. Burton, 427  
*And So On: New Designs for Teaching Mathematics* S. J. Pattison, 429  
*Probability and Statistics with Reliability, Queuing, and Computer Science Applications* John A. Dossey, 430
- October, 1984: *Computers in Today's World*, Linda Kay Oiler, 529  
*Holt General Science*, Lowell J. Bethel, 530  
*No Sense in Mathematics* Grace M. Burton, 531,  
*Problem Solving in Mathematics: A Scholastic Skills Book; Vol. C-H*, Edwin McClintock, 531  
*Why I Cough, Sneeze, Shiver, Hiccup, & Yawn*, Gladys Jenkins Bennett, 532
- November, 1984: *Modern Elementary Statistics*, Donald J. Dessart, 608  
*Trigonometry With Applications*, Terry Goodman, 610  
*Chulo: A Year Among the Coatimundis* Hans O. Andersen, 611  
*Mathematics Project Handbook* Robert Kalin, 612
- December, 1984: *Problem Solving Through Problems*, Edwin McClintock, 695  
*Figural Classifications (A-I, B-I, C-I)*, Linda Jensen Sheffield  
*Problem Solving in Chemistry*, David F. Treagust, 698

**On A Clear Day:**

Doris Glass, October 1984, 511  
Doris Glass, November 1984, 605  
Doris Glass, December 1984, 692

**Problem Department:**

N. J. Kuenzi, Bob Prielipp, Editors

**JANUARY 1984, 84**

*Proposers:* Mary S. Krimmel, Andrew C. Cusumano, Irwin K. Feinstein, Fred A. Miller, Herta T. Freitag, Stanley Rabinowitz, J. W. Wilson, Charles W. Trigg, V. C. Bailey, Fred A. Miller, David C. Wilson

*Solutions:* J. W. Wilson, Michael Brozinsky, Andrew Cusumano, Herta T. Freitag, Mary S. Krimmel, H. Don Allen, Don Balka, David A. Blaeuer, Bill Bompert, Louis H. Cairoli, William B. Duffie, William A. Ewbank, Irwin K. Feinstein, Sally S. Garber, Louise S. Grinstein, Darlene Hedrick, Paul Hernandez, J. Byers King, Henry Lulli, Robert S. Matulis, Glen E. Mills, Nathan Rud, Douglas E. Scott, Harry Sedinger, Donald P. Skow, Jeff Sveshe, Raymond E. Warburton, Tony Weaver, Charles W. Trigg, Patrick J. Boyle, Ronald M. Frinks, Sally S. Garber, Paul Hernandez, Adrian L. Hess, Ralph King, Tien Tao Kuo, Henry Lulli, Glen E. Mills, Vicki Schell, Eldon Whitesitt

**FEBRUARY 1984, 174**

*Proposers:* Herta T. Freitag, Charles W. Trigg, Ben Bauman, Stanley Rabinowitz, Michael Brozinsky, V. C. Bailey, David C. Wilson, Bill Bompert, Léo Saúve

*Solutions:* Herta T. Freitag, Michael Brozinsky, Ralph King, Charles W. Trigg, Bill Bompert, Léo Saúve, Louis H. Cairoli, Albert C. Claus, Anabeth Dollins, Fred A. Miller, Vicki Schell, Harry Sedinger

**MARCH 1984, 263**

*Proposers:* Alan Wayne, Herta T. Freitag, V. C. Bailey, R. Wardrop, Gary F. Birkenmeier, Richard L. Francis

*Solutions:* Michael Brozinsky, Marlin Brown, Gerald Thompson, Irwin K. Feinstein, Fred A. Miller, Harry Sedinger, W. R. Utz, Raymond E. Warburton, Anabeth Dollins, Louis H. Cairoli, Charles W. Trigg, H. Don Allen, Marlin Brown, David Cottrell, Connie Francis, Martin LaBar, Glen E. Mills, Tony Weaver, Sister Stephanie Sloyan

**APRIL 1984, 355**

*Proposers:* Herta T. Freitag, Edward C. Wallace, David C. Wilson, Michael Brozinsky, N. J. Kuenzi, Bob Prielipp, Charles W. Trigg, Fred A. Miller

*Solutions:* J. W. Wilson, Bill Bompert, Edwin M. Klein, Fred Flener, Michael Brozinsky, H. Don Allen, William T. Bailey, Bill Bompert, Marlin Brown, Louis H. Cairoli, Albert C. Claus, William B. Duffie, Irwin K. Feinstein, Fred Flener, Herta T. Freitag, Anton Glaser, Louise S. Grinstein, Clair Haberman, Henry Lulli, Robert S. Matulis, Fred Maynard, Glen E. Mills, Melfried Olson, Ira Lee Riddle, Vicki Schell, Harry Sedinger, Charles W. Trigg, W. R. Utz, Raymond E. Warburton, J. W. Wilson

**MAY/JUNE 1984, 442**

*Proposers:* Charles W. Trigg, Marlin Brown, Fred Maynard, Charles W. Trigg, W. R. Utz, Irwin K. Feinstein, Herta T. Freitag, Stanley Rabinowitz, Michael Brozinsky, John Oman, Jimmy Lakin, Susan Kinz, Charles W. Trigg, David C. Wilson, Michael Brozinsky, Fred A. Miller

**Solutions:** Tim Cardinal, Marlin Brown, Fred Maynard, Louis H. Cairoli, W. C. Igips, Tien Tao Kuo, Donald P. Skow, Alan Wayne, Raymond E. Warburton, David C. Wilson, Stanley Rabinowitz, Mangho Ahuja, Tim Cardinal, Irwin K. Feinstein, Herta T. Freitag, Ralph King, Léo Saúve, Barry Cohen, Lisa Dhar, Mark Holzhauser, Eileen Liang, Gordon Malis, Ben Spehlman, Dale Wood's Plane Trigonometry Class

## OCTOBER 1984, 533

**Proposers:** David McGrew, Andrew Cusamano, M. S. Klamkin, Stanley Rabinowitz, Richard L. Francis, David C. Wilson, Herta T. Freitag, N. J. Kuenzi, Bob Prielipp, Charles W. Trigg, Michael Brozinsky

**Solutions:** Anton Glaser, Glen E. Mills, H. Don Allen, Marlin Brown, Louis H. Cairoli, Irwin K. Feinstein, Robert S. Matulis, Edwin A. Rosenberg, Raymond E. Warburton, Tony Weaver, W. R. Utz, William T. Bailey, Don S. Balka, Gerald Thompson, Terry Goodman, Tien Tao Kuo, George E. O'Donnell, Jr., William J. O'Donnell, Douglas E. Scott, Harry Sedinger, Donald P. Skow, Charles W. Trigg, Tony Weaver, David C. Wilson, Herta T. Freitag, J. Byers King, Melfried Olson, Ira Lee Riddle

## NOVEMBER 1984, 625

**Proposers:** V. C. Bailey, Joe Dan Austin, Richard L. Francis, M. S. Klamkin, Herta T. Freitag, Fred A. Miller, Alan Wayne

**Solutions:** Harry Sedinger, Michael Brozinsky, Herta T. Freitag, Mary S. Krimmel, Raymond E. Warburton, Melfried Olson, Charles W. Trigg, Don S. Balka, Patrick J. Boyle, Marlin Brown, Irwin K. Feinstein, Andi Gilliland, Anton Glaser, J. Byers King, Robert S. Matulis, Fred A. Miller, Glen E. Mills, Vicki Schell, Donald P. Skow, Noojin Walker, J. W. Wilson, Ernest Woodward, Alan Wayne, Gerald Thompson

## DECEMBER 1984, 712

**Proposers:** Herta T. Freitag, William A. Ewbank, Bob Prielipp, Mary S. Krimmel, J. Garfunkel, Harry Sedinger, Andrew C. Cusumano, Irwin K. Feinstein, Fred A. Miller,

**Solutions:** Michael Brozinsky, Glen E. Mills, Russell Euler, Donald P. Skow

**Software Review Column:**

Shelley J. Davis, Editor, January 1984, 71 *Probe—Basic Programming, Learning about Numbers (1), Math Blaster*

Shelley J. Davis, Editor, February 1984, 164 *Square Pairs* Reviewer Ruth Camuse

Shelley J. Davis, Editor, March 1984, 250 *Eat Smart*, Reviewer Ruth Camuse

Shelley J. Davis, Editor, April 1984, 351 *Equations, Binomial Multiplication*

Shelley J. Davis, Editor, May/June, 432 *The Function Game, The Computer People, Logic Gates*

Shelley J. Davis, Jonathan Knaupp, Editors, October 1984, 522 *Time and Seasons Unlocking the Map Code Solving Equations and Inequalities: Discovering Algebra; Algebra Arcade*, Reviewer Alan Zollman; *Statmaster*, Reviewer Donna Craighead

Shelley J. Davis, Jonathan Knaupp, Editors, November 1984, 614 *Classification of Living Things: The Tree of Life; Polynomial Practice Using Tiles: Discovering Algebra*

Shelley J. Davis, Jonathan Knaupp, Editors, December 1984, 705 *Computer Science I, Mole Calculations*, Kay Gore, Reviewer; *Teleschool*, Joan Pochop, Reviewer

**What Research Says:**

- Achievement in Science, Patricia E. Blosser, October 1984, 514
- A Look at National and International Environmental Education Conferences, John F. Disinger, January 1984, 65
- Helping Low-Achieving Students in Mathematics, Marilyn N. Suydam, May/June 1984, 437
- Learning in the Environment, John F. Disinger, February 1984, 158
- Microcomputers and Mathematics Instruction, Marilyn N. Suydam, April 1984, 337
- Science Teachers Supply, Patricia E. Blosser, March 1984, 244
- What Research Says: Space Facts, Jo Anna Oldani, November 1984, 619
- 

**1984 December Author Index**

- Agin, Michael L., Book Review, *Twelve Pioneers of Science*, March 1984, 259
- Atwater, Mary M., Ronald D. Simpson, Cognitive and Affective Variables Affecting Black Freshmen in Science and Engineering at a Predominantly White University, February 1984, 100
- Andersen, Hans O., Book Review, *Chulo: A Year Among the Coatimundis*, November 1984, 611
- Andersen, Hans O., Harold Harty, Larry G. Enochs, Exploring Relationships among Elementary School Students' Interest in Science, Attitudes toward Science, and Reactive Curiosity, April 1984, 308
- Atwater, Mary M., Ronald D. Simpson, Cognitive and Affective Variables Affecting Black Freshmen in Science and Engineering at a Predominantly White University, February 1984, 100
- Austin, Joe Dan, Myrna Skobel Agris, *Women in School Science and Mathematics The Early Years*, May/June 1984, 386
- Baker, Dale R. Masculinity, Femininity and Androgeny Among Male and Female Science and Non-Science Majors, October 1984, 459
- Bany, Bruce, Ivan W. Kelly, Probability: Developing Student Intuition with a 20 x 20 Array, November 1984, 598
- Barrow, Lloyd H., Betty L. Bitner, Cancer Education in High School Biology Textbooks, April 1984, 285
- Bassler, Otto, Book Review, *Building Basic Skills in Mathematics*, January 1984, 81
- Batista, Michael T., Kathleen J. Steele, Gerald H. Krockover, Using Microcomputer-Assisted Mathematics Instruction to Develop Computer Literacy, February 1984, 119
- Baum, Joan, On Teaching *Flatland*, May/June 1984, 363
- Baust, Sr., Joseph A., Book Review, *Outdoor Education for the Whole Child*, February 1984, 170
- Bennett, Gladys, Margaret McKay, Summer Reading, May/June 1984, 377
- Bennett, Gladys Jenkins, Book Review, *Why I Cough, Sneeze, Shiver, Hiccup, & Yawn*, October 1984, 532

- Berman, Barbara, Book Review, *Introduction to BASIC Programming*, May/June 1984, 425
- Bethel, Lowell J., Book Review, *Education in the 80's: Science*, February 1984, 169
- Bethel, Lowell J., Book Review, *Can Science Be Saved?*, January 1984, 82
- Bethel, Lowell J., Book Review, *Holt General Science*, October 1984, 530
- Bitner, Betty L., Lloyd H. Barrow, Cancer Education in High School Biology Textbooks, April 1984, 285
- Bitter, Gary G., Editorial, October 1984, 451
- Blauer, David A., Fractions, Division, and the Calculator, February 1984, 113
- Blosser, Patricia E., What Research Says: Science Teacher Supply and Demand, March 1984, 244
- Blosser, Patricia E., What Research Says: Achievement in Science, October 1984, 514
- Bonnstetter, Ronald J., Robert E. Yager, Student Perceptions of Science Teachers, Classes, and Course Content, May/June 1984, 406
- Bright, George W., Computer Diagnosis of Errors, March 1984, 208
- Burton, Grace M., Charles E. Mitchell, Developing Spatial Ability in Young Children, May/June 1984, 395
- Burton, Grace M., Book Review, *No Sense in Mathematics*, October 1984, 531
- Burton, Grace M., Revealing Images, March 1984, 199
- Burton, Grace M., Book Review, *Speaking of Numbers: Skillbuilding in English and Arithmetic*, May/June 1984, 427
- Camuse, Ruth, Software Reviews: *Square Pairs*, February 1984, 164  
*Eat Smart*, March 1984, 250
- Cheek, Helen Neely, Book Review, *The Mathematics Laboratory in the Elementary Schools*, January 1984, 78
- Cohen, Herb, Editorial, May/June 1984, 361
- Copes, Wayne, Clifford Sloyer, William Sacco, Richard Crouse, Applications of Mathematics in Medical Science for Motivated Secondary Students, January 1984, 27
- Craighead, Donna, Software Reviews: *Heart Lab*, March 1984, 253  
*Statmaster*, October 1984, 527
- Crawley, Frank E., Book Review, *So You Want To Do A Science Project?*, February 1984, 170
- Crawley, Frank E., Book Review, *Crystals and Crystal Growing*, March 1984, 255
- Crawley, Frank E., Book Review, *Modern Physical Science*, April 1984, 346
- Crouse, Richard, Clifford Sloyer, William Sacco, Wayne Copes, Applications of Mathematics in Medical Science for Motivated Secondary Students, January 1984, 27
- Davis, Shelly J. Editor, Software Review Column:  
*Scott, Foresman Probe, Math Blaster*, January 1984, 71  
*Square Pairs* Reviewer Ruth Camuse, February 1984, 164  
*Eat Smart*, Reviewer Ruth Camuse, March 1984, 250;  
*Genetics*, March 1984, 251  
*Heart Lab*, Reviewer Donna Craighead, March 1984, 253  
*Equations, Binomial Multiplication* April 1984, 351  
*The Function Game, The Computer People, Logic Gates*, May/June 1984, 432



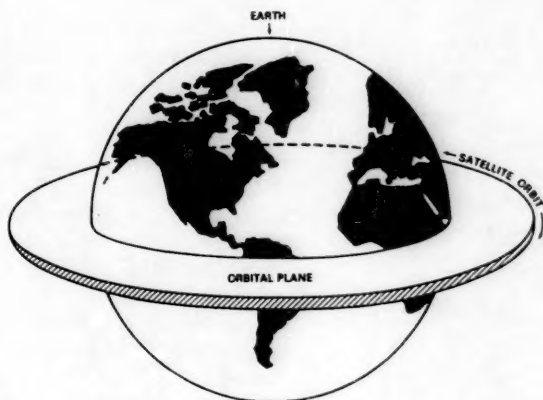
- Davis, Shelley J., Jonathan Knaupp, Editors, Software Review Column:  
*Algebra Arcade*, Reviewer Alan Zollman, October 1984, 526;  
*Statmaster*, Reviewer Donna Craighead, 527; October 1984,  
*Time and Seasons, Unlocking the Map Code, Solving Equations and Inequalities, Discovering Algebra*; October 1984, 522
- Davis, Shelley J., Jonathan Knaupp, Editors, Software Review Column  
*Classification of Living Things: The Tree of Life, Polynomial Practice Using Tiles: Discovering Algebra*, November 1984, 614
- DeBruin, Jerome E., Thomas C. Gibney, If You Teach Science and Mathematics, Then Write! January 1984, 33
- Dekkers, John, John Malone, The Concept Map as an Aid to Instruction in Science and Mathematics, March 1984, 220
- Dessart, Donald J., Book Review, *Modern Elementary Statistics*, November 1984, 608
- Disinger, John F., What Research Says: Learning in the Environment, February 1984, 158
- Disinger, John F., What Research Says: A Look at National and International Environmental Education Conferences, January 1984, 65
- Dossey, John A., Book Reviews, *Probability and Statistics with Reliability, Queuing, and Computer Science Applications* May/June 1984, 430
- Dossey, John A., Book Reviews, *Technical Mathematics*, April 1984, 344
- Doyle, Jerry, Book Reviews, *365 Starry Nights*, April 1984, 348
- Duncan, David R., Bonnie H. Litwiller, A Sequence of Sorting Strategies, January 1984, 52
- Dunkelberger, Gary E., Henry Heikkinen, The Influence of Repeatable Testing on Retention in Mastery Learning, November 1984, 590
- Edge, Douglas, *Reading Comprehension Following Training Learning-Disabled Adolescents*, January 1984, 79
- Enochs, Larry G., Harold Harty, Hans O. Andersen, Exploring Relationships among Elementary School Students' Interest in Science, Attitudes toward Science, and Reactive Curiosity, April 1984, 308
- Flener, Frederick, Teaching Mathematics in the Primary Schools in England: An American's Perspective, February 1984, 91
- Fredrick, Dennis, Carol Mishler, Thomas P. Hogan, College Freshmen Mathematics Abilities: Adults versus Younger Students, April 1984, 327
- Fyffe, Darrel W., Annual Business Meeting Minutes, SSMA, May/June 1984, 420
- Fyffe, Darrel W., School Science and Mathematics Association 1984 Annual Business Meeting Minutes, October 1984, 496
- Gabel, Dorothy, Book Review, *The Visual Science Series*, January 1984, 75
- Gibney, Thomas C., Jerome E. Debruin, If You Teach Science and Mathematics, Then Write! January 1984, 33
- Glass, Doris, Column: On a Clear Day, October 1984, 511  
 November 1984, 605  
 December 1984, 692
- Goodman, Terry, Book Review, *Trigonometry With Applications*, November 1984, 609
- Graening, Jay, Book Review, *Formulas Made Easy: 40 Visual Masters*, January 1984, 76
- Harty, Harold, Hans O. Andersen, Larry G. Enochs, Exploring Relationships among Elementary School Students' Interest in Science, Attitudes toward Science, and Reactive Curiosity, April 1984, 308
- Heikkinen, Henry, Gary E. Dunkelberger, The Influence of Repeatable Testing on Retention in Mastery Learning, November 1984, 590



- Hernandez, Norma G., Book Review, *Pushbutton Mathematics*, March 1984, 260
- Hill, Douglas M., Michael G. Redden, Spatial Puzzles and the Assessment of Children's Problem-Solving Performance, October 1984, 475
- Hirsch, Cheryl, *Billions of Bats*, February 1984, 172
- Hogan, Thomas P., Dennis Fredrick, Carol Mishler, College Freshmen Mathematics Abilities: Adults versus Younger Students, April 1984, 327
- Huber, John C., Viete's Method for Calculating Pi, November 1984, 542
- Johns, Kenneth W., Wanted: Money and Time for Science, April 1984, 271
- Kalin, Robert, Book Review, *Mathematics Project Handbook*, November 1984, 612
- Kapoor, Don, Book Review, *Multidimensional Man*, February 1984, 167
- Kelly, Ivan W., Bruce Bany, Probability: Developing Student Intuition with a 20 x 20 Array, November 1984, 598
- Kennedy, Patricia, Book Review, *The Elements of CAL*, March 1984, 256
- Knaupp, Jonathan, Shelley J. Davis, Software Review Column:  
*Time and Seasons, Unlocking the Map Code, Solving Equations and Inequalities: Discovering Algebra, Algebra Arcade, Statmaster*, October 1984, 522  
*Classification of Living Things, The Tree of Life, Algebra Arcade, Statmaster*, November 1984, 614  
*Computer Science I, Mole Calculations, Teleschool*, December 1984, 705
- Krause, Eugene F., Functions and Equations in High School Algebra, February 1984, 136
- Krockover, Gerald H., Kathleen J. Steele, Michael T. Batista, Using Microcomputer-Assisted Mathematics Instruction to Develop Computer Literacy, February 1984, 119
- Kuenzi, N. J., Bob Prielipp, Problem Department, January 1984, 84  
 February 1984, 174  
 March 1984, 263  
 April 1984, 355  
 May/June 1984, 442  
 October 1984, 533  
 November 1984, 625  
 December 1984, 712
- Litwiller, Bonnie H., David R. Duncan, A Sequence of Sorting Strategies, January 1984, 52
- Mallinson, George G., Leastwise, Not Much! January 1984, 1
- Manning, Brenda H., A Self-Communication Structure for Learning Mathematics, January 1984, 43
- Malone, John, John Dekkers, The Concept Map as an Aid to Instruction in Science and Mathematics, March 1984, 220
- Mayer, Victor J., Crustal Evolution Education Project Materials: National Evaluation, January 1984, 7
- McClintock, Edwin, Book Review *Mathematics Contests: A Handbook for Mathematics Educators*, March 1984, 254
- McClintock, Edwin, Book Review, *Problem Solving in Mathematics: A Scholastic Skills Book; Vol. C-H*, October 1984, 531
- McKay, Margaret, Gladys Bennett, Summer Reading, May/June 1984, 377
- Meyer, Ruth A., James E. Riley, Investigating Decimal Fractions with The Hand Calculator, November 1984, 556
- Mintzes, Joel J., Naive Theories in Biology: Children's Concept of the Human Body, November 1984, 548

- Mishler, Carol, Dennis Fredrick, Thomas P. Hogan, College Freshmen Mathematics Abilities: Adults versus Younger Students, April 1984, 327
- Mitchell, Charles E., Grace M. Burton, Developing Spatial Ability in Young Children, May/June 1984, 395
- Norris, Stephen P., Cynicism, Dogmatism, Relativism, and Scepticism: Can All These Be Avoided?, October 1984, 484
- Oiler, Linda Kay, Book Review, *Computers in Today's World*, October 1984, 529
- Oldani, Jo Anna, What Research Says: Space Facts, November 1984, 625
- Pattison, S. J., Book Review, *Brain Ticklers: Puzzles and Pastimes*, January 1984, 80
- Pattison, S. J., Book Review, *And So On: New Designs for Teaching Mathematics* May/June 1984, 429
- Pereira-Mendoza, L., Developing Area Formulas, April 1984, 297
- Prielipp, Bob, N. J. Kuenzi, Problem Department, January 1984, 84  
February 1984, 174  
March 1984, 263  
April 1984, 355  
May/June 1984, 442  
October 1984, 533  
November 1984, 625  
December 1984, 712
- Redden, Michael G., Douglas M. Hill, Spatial Puzzles and the Assessment of Children's Problem-Solving Performance, October 1984, 475
- Retzer, Kenneth A., Inferential Logic in Geometry, April 1984, 277
- Retzer, Kenneth A., Logic, Tradition, Truth in Algebra, and Inferences for Geometry, March 1984, 181
- Retzer, Kenneth A., Proofs with Visible Inference Schemes, May/June 1984, 367
- Rice, Dale R., Book Review, *Guinea Pigs: An Owner's Guide to Choosing, Raising, Breeding and Showing*, March 1984, 258
- Richardson, Robin K., Book Review, *Planning for Change: A Course in Ecological Planning* April 1984, 349
- Richardson, Robin K., Book Review, *A Cat's Body*, February 1984, 171
- Riley, James E., Ruth A. Meyer, Investigating Decimal Fractions with the Hand Calculator, November 1984, 556
- Rosenberg, Edwin A., A Question of Associativity or Many Are the Uses of Commutativity, November 1984, 566
- Sacco, William, Clifford Sloyer, Richard Crouse, Wayne Copes, Applications of Mathematics in Medical Science for Motivated Secondary Students, January 1984, 27
- Sloyer, Clifford, William Sacco, Richard Crouse, Wayne Copes, Applications of Mathematics in Medical Science for Motivated Secondary Students, January 1984, 27
- Smith, C. Leland, J. Truman Stevens, A Criterion-Referenced Evaluation of Student Teachers in Science, February 1984, 125
- Stannard, William A., "Guess and Check" Problem Solving Strategy + Computer Programming = A Tool To Solve Word Problems, October 1984, 453
- Staver, John R., Research on Formal Reasoning Patterns in Science Education: Some Messages for Science Teachers, November 1984, 573
- Steele, Kathleen J., Michael T. Batista, Gerald H. Krockover, Using Microcomputer-Assisted Mathematics Instruction to Develop Computer Literacy, February 1984, 119

- Stevens, J. Truman, C. Leland Smith, A Criterion-Referenced Evaluation of Student Teachers in Science, February 1984, 125
- Stonehouse, Harold, and Rod Cranston, What Is the National Earth Science Teachers Association? December 1984, 699
- Suydam, Marilyn N., What Research Says: Microcomputers and Mathematics Instruction, April 1984, 337
- Suydam, Marilyn N., What Research Says: Helping Low-Achieving Students in Mathematics, May/June 1984, 437
- Thomas, William E., Projectile Motion in a Resisting Medium: A Computer Simulation, April 1984, 320
- Tomera, Audrey N., Book Review, *Sun Power: The Story of Solar Energy*, January 1984, 77
- Underhill, W. Vance, Protologarithms, April 1984, 316
- Virginia Usnick, Book Review, *Teaching Kids Math*, May/June 1984, 426
- Woodward, Ernest, A One-and-One Free Throw Opportunity in Basketball: The Probability of It, October 1984, 468
- Yager, Robert E., The Major Crisis in Science Education, March 1984, 189
- Yager, Robert E., Ronald J. Bonnstetter, Student Perceptions of Science Teachers, Classes, and Course Content, May/June 1984, 406
- Zollman, Alan, Software Review, *Algebra Arcade*, October 1984, 526



An orbital plane may be visualized as a flat plate bisecting Earth.